APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,607	12/29/1999	FRED OLIVEIRA	E0295/7136	2467

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EXAMINER
POLLACK, MELVIN H

ART UNIT	PAPER NUMBER
2142	5

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/474,607	OLIVEIRA ET AL.
	Examiner	**Art Unit**	
	Melvin H Pollack	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is ·closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers .

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☒ Other: *see attached office action* .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

2.   The examiner has attempted to learn the "out of band commands" definition by reading remarks and the entire section on multi-path systems (Page 23, line 30 - Page 34, line 6, esp. Page 32, line 18 – Page 33, line 33, and Fig. 12-15). In the application as drawn, there are several lines (P1-P4) that connect from each host to each storage device, and each path both reads and writes data. Neither the specification nor the drawings illustrates the "normal read-write path" or illustrates in great detail how out-of-band commands work. Indeed, the out-of-band configuration is a mere "alternate embodiment" of the entirety drawn in the specification, albeit the focus of all the claims.

3.   Applicant writes, "out of band control commands are path-specific operations, and typically will identify a particular one of the multiple paths P1-P4 over which the communication is to take place (Page 2, lines 27-29)." Applicant also writes that they can "be associated with control functions or the reading and writing of data outside of the normal read/write path (Page 2, lines 18-20)." These definitions are unclear, and the specification and drawings do not clarify it to any extent. The examiner has decided that there are four possible interpretations. First, it is an internal signal in which the host tells itself which line to use (P1-P4) for reading and writing. Second, it is an signal from the host to the storage system to set up one of the lines (P1-P4) for transfer, and this signal is sent on either one of the lines (P1-P4, with the command going on P1 and the data transfer going on P2) or an undisclosed set of lines. Third, there are an undisclosed

set of lines (i.e. P5-P8) which are either set up solely for upstream commands or that can be used

for read/write functions. Or four, the applicant defines P1 and P2 as the normal read/write path,

and P3 and P4 as the out of band control path.

4.   Of these, none of the interpretations are fully disclosed by them. The examiner is thus

forced to choose one of the interpretations that he feels most supported by the specification. He

chooses embodiment 2 for this office action, with an OOB command on P1 and a data read/write

on P2, as originally interpreted by the examiner. Any other embodiment requires significant

amendments to the figures, claims and specification. Even with this embodiment, amendments

are highly suggested.

5.   Examiner notes that, since no claim states that "an out-of-band command is used to

choose a data path for transfer," the examiner can apply any form of command, including the

choosing of a read-write path, but also including related commands such as the mere request for

data to be transmitted to the host or to another host.

6.   Regarding Kikinis, it is shown that the system has two paths P1 (Fig. 1, #15, land line)

and P2 (Fig. 1, #37, satellite line). Actually, there can be more lines added (col. 2, line 66 – col.

3, line 2), and each line can be split up into several paths (col. 7, lines 21-27). Both lines can be

used for downloading or uploading (col. 4, lines 61-64 and col. 8, lines 62-63), and a mechanism

exists to determine which route to use in both cases (col. 5, lines 23-28), which fulfills the

OOBC embodiment 1. In this case, a user can send a request for data over the land line (or the

satellite link) and receive data from the satellite link (or the land line). Therefore, the applicant's

arguments are non-persuasive.

Drawings

7.   New corrected drawings are required in this application because of the low quality of the

drawings, especially in line quality, near-illegible writing, and inadequate margins (i.e. Fig. 12,

although all of the figures have similar problems). Applicant is advised to employ the services of

a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no

longer prepares new drawings. The corrected drawings are required in reply to the Office action

to avoid abandonment of the application. The requirement for corrected drawings will not be

held in abeyance.

8.   Figure 1 should be designated by a legend such as --Prior Art-- because only that which is

old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings

are required in reply to the Office action to avoid abandonment of the application. The objection

to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

9.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

10.   Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject

matter which was not described in the specification in such a way as to enable one skilled in the

art to which it pertains, or with which it is most nearly connected, to make and/or use the

invention. In the response to arguments, examiner has shown that the specification is lacking in

subject matter related to the "out of band" enablements, and thus several possible enablement

interpretations are possible. The examiner requires amendments to the figures, claims AND the

specification to more clearly point out the particular embodiment and to clarify the normal

read/write path and the location and use of the out-of-band command. Specifically, clarification

is required to explain the relationship between the out-of-band command between the host and

the storage system, as well as its relationship to P1-P4 and its particular utility and uses. Please

include support to show that new subject matter was not added.

Claim Rejections - 35 USC § 102

11.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this
> or a foreign country, before the invention thereof by the applicant for a patent.
> (e) the invention was described in a patent granted on an application for patent by another filed in the United
> States before the invention thereof by the applicant for patent, or on an international application by another who
> has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention
> thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) do not apply to the examination of this application as the application being examined

was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C.

122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment

by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

12.   Claims 1-3, 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Grun et al.

(6,081,848).

13.   For claim 1, Grun teaches a method (see abstract) of processing an out of band control

command executed by a host computer in a multipath system (Fig. 1), including the host

computer (Fig. 1, #10), a device (Fig. 1, #40) and multiple paths coupling the host computer to

the device (Fig. 1, #30), the out of band control command further identifying, from among the

multiple paths, a target path for transmission of the out of band control command between the host computer and the device (col. 1, lines 50-55), the method comprising the steps of:

    a.   Selecting a selected path for transmitting out of band control command between the host computer and the device (col. 2, lines 34-40), the selected path being selected from among the multiple paths based upon a selection criteria that enables the selected path to be other than the target path identified by the out of band control command (col. 3, line 66 – col. 4, line 5); and

    b.   Transmitting the out of band control command between the host computer and the device over the selected path (Fig. 1, #21-24).

14.   Examiner notes that Fig. 1 of Grun is quite similar to Fig. 12 of the application.

15.   As for claim 2, Grun teaches that the device is a data storage system (Fig. 1, #70), where the out of band control command requests access to information stored on the data storage system (col. 3, lines 13-28), and wherein the step (B) includes a step of transmitting the information between the host computer and the data storage system over the selected path (col. 4, lines 6-20).

16.   As for claim 3, there is a second computer that is coupled to the data storage system, wherein the data storage system includes a shared storage region shared by the host computer and the second computer, wherein the target address specifies the shared storage region, and wherein the step (B) includes a step of transmitting the information between the host computer and the shared storage region over the selected path (col. 4, lines 52-60).

17.   As for claim 7, Grun teaches the step of selecting the path based upon a state of

previously assigned operations queued for transmission from the host computer to the device

over the multiple paths (col. 2, lines 34-40).

18.   Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by Lambrecht et al.

(5,935,232).

19.   For claim 1, Lambrecht teaches (see abstract) a set of hosts (Fig. 2, 210) which use

several buses (Fig. 2, 230 and 232) to send and receive data (col. 4, lines 23-35) from a set of

devices (Fig. 2, #220 and 222). An OOB command can be sent down bus 230 while data can be

transferred down bus 232 (col. 4, lines 49-60).

Claim Rejections - 35 USC § 103

20.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

21.   Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grun as

applied to claims 1-3, 7 above, and further in view of Kikinis (6,289,389).

22.   For claims 1-3, 7, that which is anticipated is obvious. Further, Kikinis anticipates all the

limitations of claims 1 and 2, as shown above and in the previous office action.

23.   For claims 4 and 5, Grun teaches that the target path is selected when operational, as

shown above. Kikinis teaches that a different path is automatically selected when the target path

is non-operational (col. 3, lines 10-13 and col. 6, lines 19-32), without intervention of a system

administrator (col. 6, line 66 – col. 7, line 10). It is well known in the art that target paths become non-operational constantly, and that fail-safe methods are always required. Therefore, at the time the invention was made, one of ordinary skill in the art would have used a Kikinis fail-safe mechanism in the Grun access method in order to handle the situation in which one or more of the paths becomes non-operational.

24.   For claim 6, Grun does not expressly disclose the selection algorithm for selecting a path. Kikinis teaches the selection algorithm that distributes, among the multiple paths a load of operations passing between the host computer and the device (col. 6, lines 19-32). At the time the invention was made, one of ordinary skill in the art would have used the Kikinis selection method as a teaching on how to implement the selection method of Grun.

25.   Claims 8-14 are drawn to a computer readable medium encoded with a program for execution to implement the method drawn in claims 1-7, respectively. The prior art teaches that a software implementation is functionally equivalent to the underlying method. Official notice is taken regarding the fact that a program is stored on a computer readable medium and executed on a system. Therefore, if claims 1-7 are rejected, then claims 8-14 are also rejected for the reasons above.

26.   Claims 15-21 are drawn to a hardware system that implements the method drawn in claims 1-7, respectively. The prior art teaches that a hardware system is functionally equivalent to the underlying method. Therefore, if claims 1-7 are rejected, then claims 15-21 are also rejected for the reasons above.

27.   Claim 22 is a system means claim with many of the limitations of claim 20. If claim 20 is rejected, then claim 22 is also rejected for the reasons above.

Conclusion

28.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. They all teach background on multipath systems and OOB command structures.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Melvin H Pollack whose telephone number is (703) 305-4641.

The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mark R Powell can be reached on (703) 305 - 9703. The fax phone numbers for the

organization where this application or proceeding is assigned are (703) 746-7239 for regular

communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-3800.

MHP
January 26, 2003
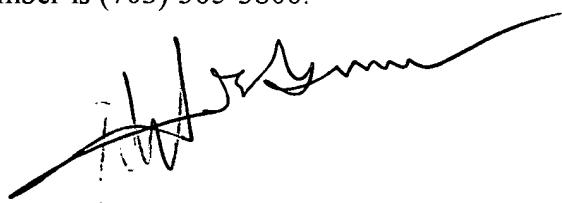
ROBERT B. HARRELL
PRIMARY EXAMINER